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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/579,983	05/22/2006	Estibalitz Erauzkin Bilbao	G80-035 US	3727

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EXAMINER	
YANG, JIE	

ART UNIT	PAPER NUMBER
1793	

MAIL DATE	DELIVERY MODE
10/27/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/579,983	ERAUZKIN BILBAO ET AL.	
	Examiner	Art Unit	
	JIE YANG	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 July 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) *12-23* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 May 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Applicant's election with traverse of "Group I—Claims 1-11, in the reply filed on 7/9/2008 is acknowledged. The traversal is on the ground(s) that Group II—product claims and the species, which further limit any allowable method claims might be re-jointed. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the requirement is still deemed proper and is therefore made FINAL.

Claims 1-11 are amended from original claims, claims 12-23 are withdrawn from consideration as being directed to a non-elected group, and Claims 1-11 are pending for examination. The elected specie is cp-Ti consumable ingot.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1, 3-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abkowitz et al (US 5,897,830, thereafter US'830) in view of Brupbacher et al (US 4,772,452, thereafter US'452).

Regarding claims 1, 3, and 5, US'830 teaches a method for a consumable billet by melting and casting a metal matrix composite component having a titanium or titanium alloy matrix reinforced with particles (Abstract, Col.2, lines 6-11 of US'830), which reads on the method for producing titanium composite parts by means of casting as recited in the instant claim 1. US'830 teaches selecting TiC, TiB, and/or TiB_2 as the reinforcing particles in titanium and titanium alloy (Col.3, lines 3-16 of US'830), which reads on the titanium composite reinforcement material and non-reinforced titanium or titanium alloy as recited in the instant claims 1 and 3. US'830 teaches melting the P/M (powder metallurgical) titanium alloy and casting, more specifically mold casting wherein the molten metal solidified and takes on the desired final component shape and dimensions (Col.3, lines 39-59, claims 25-26, and Col.1, lines 46-64 of US'830), which read on the simultaneous melting and mould casting process as recited in the instant claim 1. US'830 does not specify the non-reinforced titanium material is in a consumable ingot form as recited in the instant claims 1 and 5. US'452 teaches a process for forming metal-second phase composites utilizing compound starting materials (Title of US'452). US'452 teaches that the matrix metal needs not be formed from powdered metal, but may be formed from ingot, scrap,

etc., thus resulting in a significant saving in material preparation costs (Col.13, lines 3-8 of US'452). Therefore, it would have been obvious to one skilled in the art to apply the matrix metal in a consumable ingot form as demonstrated by US'452 in the process of US'830 in order to save the material preparation cost (Col.13, lines 3-8 of US'452).

Regarding claim 4, US'830 does not specify the reinforcement material has between 30-70wt% of titanium boride and /or carbide dispersed in the titanium or titanium alloy. US'452 teaches: the process for the in-situ precipitation of up to about 95 percent by volume of second phase material in a solvent metal matrix, which overlapping the composition range of reinforcement material as recited in the instant claim. US'452 specifically teaches titanium diboride and titanium carbide as second phases (Col.10, lines 26-63 of US'452) in the suitable matrix metals including Ti and alloy (Col.9, lines 57-62 of US'452). Therefore, it would have been obvious to one skilled in the art to add 30-70wt% of titanium boride and /or carbide as reinforcement material as demonstrated by US'452 in the process of US'830 in order to obtain desired reinforcing effect.

Regarding claim 6, US'830 teaches the examples of alloys that may be used include: alpha structure titanium material such

as commercially pure titanium (Col.3, lines 27-39 of US'830), which reads on the cp-Ti grade 1 to 4 as recited in the instant claim.

Regarding claims 7-9, US'830 does not specify to unite the reinforcement material with the consumable ingot prior to melting by welding (claim 7), by mechanical means (claim 8), or by inserting in one or more holes of the consumable ingot (claim 9). US'452 teaches: the intermediate composite may be admixed with solid host metal, metal alloy or intermetallic, and then heated to a temperature above the melting point of the host metal (Col.14, lines 48-52 of US'452), the admixing method of US'452 general enough to cover the different methods of uniting the reinforcement material with the consumable ingot prior heating, for example: welding, mechanical connecting, or inserting into the holes as recited in the instant claims. Therefore, it would have been obvious to one skilled in the art to unite the reinforcement material with the consumable ingot prior heating by different methods as demonstrated by US'452 in the process of US'830 in order to obtain uniformly dispersion results (Col.14, lines 35-68 of US'452).

Regarding claim 10, US'830 teaches: in the casting experiments, melting by either by vacuum induction or by vacuum

arc process, which are the same melting methods as recited in the instant claim.

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over US'830 in view of US'452, and further in view of Brupbacher et al (US 4,836,982, thereafter US'982).

Regarding claim 2, US'830 in view of US'452 does not specify that the reinforcement material is obtained by means of the self-propagated high-temperature synthesis method. However self-propagated high-temperature synthesis (SHS) is a well-known process for making the ceramic powders as evidenced by US'982. US'982 teaches a method for rapid solidification of metal-second phase composites (Abstract, title of US'982). US'982 teaches:"In recent years, numerous ceramics have been formed using a process termed "self-propagating high-temperature synthesis" (SHS). It involves an exothermic, self-sustaining reaction which propagates through a mixture of compressed powders." (Col.2, lines 43-58 of US'982). Therefore, it would have been obvious to one skilled in the art to apply the well-known SHS technique as taught by US'982 to synthesize the reinforcement material in the process of US'830 in view of US'452 with expected success.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over US'830 in view of US'452, and further in view of Ray et al (US 6,755,239 B2, thereafter US'239).

Regarding claim 11, US'830 in view of US'452 does not specify that the mould casting is done by means of a centrifuging or gravity filling process. US'239 teaches a method for making various titanium base alloys by centrifugal casting. US'452 teaches that an improved surface quality, structural intensity and mechanical properties have been obtained by the centrifugal casting. Therefore, it would have been obvious to one skilled in the art to apply the centrifugal casting method of US'239 in the process US'830 in view of US'452 in order to obtain high quality titanium base components.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY

/Roy King/

Supervisory Patent Examiner, Art Unit 1793